

Method of Test For
**DETERMINATION OF SPECIFIC GRAVITY AND DENSITY CHARACTERISTICS OF
COMPRESSED ASPHALTIC MIXTURES**

DOTD DESIGNATION: TR 304-14

Scope

1. This method of test is intended to determine the bulk specific gravity (G_{mb}) and density characteristics of specimens of asphaltic mixtures made with low absorptive aggregates.
2. Reference Documents
 - A. AASHTO T 312 – Preparing and Determining Density of Hot Mix Asphalt (HMA) Specimens by Means of the Superpave Gyratory Compactor
 - B. AASHTO T 166 – Bulk Specific Gravity of Compacted Asphalt Mixtures Using Saturated Surface-Dry Specimens.
 - C. DOTD TR 327 – Theoretical Maximum Specific Gravity of Asphaltic Concrete Mixtures
 - D. DOTD TR 3xx – Asphalt Volumetric Calculations

Apparatus

1. Use AASHTO T 166 METHOD A, Section 5-APPARATUS with the following modifications
 - A. Suspension Apparatus container shall be a No. 4 mesh basket or other approved, non-corrosive device for holding the specimen.
 - B. Water Bath shall be a minimum of 10 gallons.
 - C. Suitable calibrated digital thermometer may be used.
2. Asphaltic Concrete Plant Report – DOTD Form No. 03-22-3085
3. Asphaltic Concrete Pavement Report – DOTD Form No. 03-22-3080

Health Precautions

Proper precautions are to be taken whenever hot materials or equipment must be handled. Use container holder or thermal gloves while handling hot containers. Wear eye protection while stirring and weighing heated materials due to possible shattering of particles. Dry contaminated materials under a vent to prevent exposure to fumes.

Sample

Use AASHTO T 166 Section 4-TEST SPECIMENS

Procedure

1. Use AASHTO T 166 METHOD A, Section 6-PROCEDURE with the following modifications
 - A. When weighing in water, no manipulation of the briquette or container is allowed.
 - B. Molded Briquette: Compute Density, Percent Theoretical Maximum Specific Gravity (%G_{mm}), Percent Voids (V_a), Percent Voids in Mineral Aggregate (%VMA), and Percent Voids Filled with Asphalt (%VFA) using DOTD TR 3xx – Volumetric Calculations
 - C. Pavement Core: Compute Density, Percent Theoretical Maximum Specific, and Average Density for the lot using DOTD TR 3xx – Volumetric Calculations

Note 1: As per AASHTO T 166 Section 6-PROCEDURE, an alternative to oven drying may be used to dry the sample according to ASTM D 7227.

Report

1. Report all bulk specific gravity and maximum theoretical specific gravity results to the nearest 0.001.
2. Report the following results to the nearest 0.1.
 - A. Percent Maximum Theoretical Specific Gravity
 - B. Percent Voids
 - C. Percent Voids in Mineral Aggregate (%VMA)
 - D. Density of Mixture
 - E. % Pavement Density

Note 2: *Approved forms other than Asphaltic Concrete Plant and Pavement Reports may be used to report density characteristics.*

Normal Test Reporting Time

Normal test reporting time is 2 days.